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Cover: A young adult Santa Cruz Island Galapagos tortoise, *Geochelone nigra porteri*. Photograph by David S. Lee.

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Harriet: A Noble Old Tortoise in Need of Credentials

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One turtle knows several Napoleons.
Henry David Thoreau, 1856

For a number of years numerous stories appeared in newspapers and magazines regarding Harriet, an ancient tortoise living in an Australian zoo.

175th birthday bash for tortoise

A zoo in Australia has held a 175th birthday party for one of the world's oldest known living creatures, a giant Galapagos tortoise.

Australia Zoo, where the tortoise has lived for the last 17 years, marked the day with a pink hibiscus flower cake.

Although the animal's exact date of birth is not known, DNA testing has indicated its approximate age.

Some people believe the tortoise, known as Harriet, was studied by British naturalist Charles Darwin.

Darwin took several young giant Galapagos tortoises back to London after his epic voyage on board *HMS Beagle*.

DNA testing has suggested the giant creature was born around 1830, a few years before Darwin visited the Galapagos archipelago in 1835.

However, Harriet belongs to a subspecies of tortoise only found on an island that Darwin never visited.

At the time of Darwin's visit, Harriet would have been about as big as a dinner plate. She now weighs 150 kg . . . and is roughly the size of a dinner table.

According to the BBC's Phil Mercer, in Sydney, Harriet has become somewhat of a celebrity at the Australia Zoo on Queensland's Sunshine Coast.

She receives a thorough wash every morning and is fed a vegetarian diet that includes green beans and celery.

Her keepers believe she has survived for so long because she has enjoyed a stress-free life. (BBC 2005)

When Harriet died the news media took renewed interest. For some years she had been regarded as the world's oldest living animal. Newspapers around the world told the story, a tribute to a remarkable Galapagos tortoise that was a living exhibit for nearly 175 years in various Australian zoos. And if the documented age was not enough, the story was even more special; this particular tortoise once belonged to none other than Charles Darwin. The same Charles Darwin for whom the variation between insular populations of Galapagos tortoises had helped to form his theory of evolution. During his visit to the relatively young (in geological terms) Galapagos Islands, Darwin became aware that the populations of tortoises on the various islands were each recognizably different; many believe this observation was the seed from which his theories developed. Even major TV networks carried the ancient tortoise's story, after reporting the "news" of hot celebrity relationships they managed to work in a sentence or two about the passing of Harriet.

Here was a living creature that was around long before the development of Velcro, smart bombs, or breast implants. She has overseen with little interest the dawn of the Industrial Revolution, the atomic age, the space age, and marketing of

our personal effects on eBay. Religious debates over intelligent design, the spread of interstate transport systems, airport flight delays and most all of the other topics that form our modern-day lives developed during the lifetime of this tortoise. This old tortoise had both a name and a history, a combination that was paradoxically endearing to our fast-paced and dynamically changing world. To all who knew her she was a living link between our own past and the fast-lane life that now dictates our everyday existence.

For nearly a decade I had worked the story of Harriet into talks on turtles and tortoises that I was asked to present to various and sundry audiences. Harriet's story is a good one, and if it were actually correct it would be even better.

Within 24 hours of her death the major news stations re-circulated the story — Harriet was not one of Darwin's tortoises after all. DNA studies revealed that the tortoise had originated on one of the Galapagos Islands that Darwin never visited. With the loss of this linkage, her actual age also came into question. Though the original story was heartwarming, it's too bad that it did not have the additional advantage of being true. What spawned such a tale, and what evidence was there to even

suggest that this beloved tortoise was at one time a personal pet of Darwin?

Here is what we actually know: Harriet's past can be traced with certainty from 1870 until the time of her death. This tortoise lived at the Australia Zoo from 1987 until she died in June 2006, where she was under the care of the late Steve Irwin, famed TV crocodile hunter and owner of the zoo. Irwin obtained Harriet from the Fleay's Wildlife and Fauna Park when the park closed in 1987. Fleay himself was a well-known naturalist of the region and among other claims to fame he was first to breed the platypus in captivity and the last person to photograph and be bitten by the now extinct Tasmanian tiger or thylacine (1933). He still bore the bite scars at the time of his death. Today most are unfamiliar with the doglike Tasmanian tiger, a predatory marsupial somewhat related to the character recreated in Bugs Bunny cartoons as "Tas" the Tasmanian devil.* When Fleay first obtained the tortoise in 1958 from Brisbane's City Botanic Gardens (CBG) he determined that it was a female, and "Harry" was renamed "Harriet." We know from the CBG's records and interviews with some of the early town residents that Harriet lived there from sometime prior to 1870 through 1958. The exact date of acquisition is unclear as records were destroyed in major flood. Thus, we can document the history and whereabouts of Harriet from 1870 to 2006, a period of 134 years.

Now let's track the tortoises that Darwin is believed to have brought home from the Galapagos: We know from the ship's logs that while the *Beagle* was in the Galapagos, Robert FitzRoy, the ship's captain, took a number of tortoises on board. Eighteen were obtained from San Cristobal in 18 September 1835. They were small tortoises, each less than 80 pounds. On the following day 30 large tortoises were taken on board. All of these tortoises were probably cooked and eaten as no tortoise remains were recorded when the ship returned to England. The ship's crew, however, had collected a number of small tortoises, several or more of which appeared to have made it back to England. In 1837 Darwin took some young tortoises to John Gray, a well-known herpetologist of the day who presided over the reptile collections in London's British Museum. There is evidence that Captain FitzRoy retained two small tortoises as there are records showing he recorded their growth, and that Darwin and Syms Covington, Darwin's personal servant, likewise had two. A document in Darwin's own handwriting states:

*Covington's little tortoise (Charles Island [Santa Maria])
Mine from James [San Salvador]*

So we know that at least a few of these small tortoises made it back to England. Captain FitzRoy appears to have donated his to the British Museum in March 1837. The ones examined by Gray at the British Museum cannot be traced. There is no

record of other *Beagle* tortoises becoming part of the collections of the museum.

Thus, we have a period of at least 30 years where we have no indication as to where Harriet was or the whereabouts of Darwin's tortoises. The chain of evidence is incomplete and the actual linking of Harriet to Darwin was at best speculative. I think we all could have lived without knowing there were flaws in the story because the public relations version is such a good one. We love such a story and this one did much to personalize the longevity of tortoises and to frame the plight of giant tortoises with a meaningful historical perspective. Unfortunately there are a number of key facts that individually and collectively suggest that Harriet was not likely to have been one of the *Beagle*'s original tortoises. Let's examine the conflicting aspects of the Harriet/Darwin connection.

First, both visual identification and DNA studies show that Harriet is a specimen of *Geochelone nigra porteri*, a race (or by the thinking of some, a species) of Galapagos tortoise endemic to Santa Cruz Island. One does not need DNA to know this, people familiar with Galapagos tortoises could correctly identify the race, and thereby origin, of Harriet simply by looking at her. Also, neither the *Beagle* nor Darwin visited Santa Cruz Island. While it is known that tortoises were translocated between various islands during the 1800s it at first seems unlikely that this would account for this tortoise.

Furthermore, because of the lack of reliable fresh water on Santa Cruz the island was seldom visited. This is the primary reason that the tortoise populations on this island remain relatively intact today. Thus, the fact that Harriet came from Santa Cruz Island and not one of the islands visited by the *Beagle* would appear to be the deal breaker. However, at the time of Darwin's visit to Santa Maria Island (also called Floreana and Charles), the island where his servant's tortoise originated supported a prison colony. Prison staff and inmates had long before consumed most of the island's indigenous tortoises and new tortoises were brought in from other islands to replenish the supplies. Therefore a Santa Cruz tortoise on Santa Maria is entirely possible. There are a number of documented records of wayward tortoises recovered on the wrong islands for just such reasons.

Second, the origin of all the speculation about the Harriet/Darwin connection was based on the recollection of an historian living in Brisbane that three of the CBG's tortoises had been brought in by Captain John Clements Wickham in the mid 1800s. Wickham had spent some time elsewhere gathering scientific specimens for Darwin. However, Wickham himself never visited the Galapagos. It is not known if additional tortoises were added to the Botanic Gardens collection subsequent to these three, so while the speculation seemed logical that these particular tortoises may have been associated with Darwin's expedition, this has never been confirmed.

* The Tasmanian tiger, or thylacine, *Thylacinus cynocephalus*, is an extinct marsupial carnivore (the last captive, a male named Benjamin, the one that bit Fleay, died in 1936). Though there have been many rumors that it may still survive somewhere in the wild, they appear to have all been exterminated as a result of bounties placed on them by European settlers and sheep herders. Tasmanian tigers were large and striped. The Tasmanian devil, *Sarcophilus harrisii*, a smaller marsupial predator still very much around, is now in trouble because of a nasty form of mouth cancer resulting from a virus.

Third, for the most part Galapagos tortoises kept in England died within one or two years, as the English climate is terrible for most tortoises. Based on Wickham's retirement and move to Australia, Darwin would have had to keep Harriet alive in England for five years prior to her going to Australia, and we know for sure that at least two of the *Beagle* tortoises were dead by March 1937. Additionally, Darwin was having health issues at this time. His marriage after his return and his moving about in England likewise suggest that he did not likely have the time to successfully look after pet tortoises. Oh, and did I mention he was also working on a book?

Fourth, there are no letters of transfer. As did many in the pre-telephone period, Darwin conducted most of his business by letter and this extensive correspondence has been preserved. If he had indeed sent tortoises with Wickham it should have been documented. In fact, the British were very meticulous in their record keeping, and this is particularly true of Royal Navy ships. Transport of something as unusual as live tortoises on a three-month voyage from England to Australia would most likely have been captured in the ship's log.

While we know Darwin and his servant each had a pet tortoise, it appears these tortoises never made it back to England. In an 1874 letter to Albert Günther (himself a well known museum researcher of giant tortoises) Darwin may have put this whole convoluted story to rest. Günther was attempting to match specimens with field notes and inquired about missing tortoise specimens. Darwin replied, "I find that I did not bring home any tortoises from the Galapagos, as several were brought home by the surgeon and FitzRoy." This does not rule out Darwin having pets that died on the return voyage to England, or Harriet being a tortoise first taken to England by the crew of the *Beagle* instead of Darwin himself, but it does make the connection even less likely.

Fifth, the historian whose story started all the speculation about Harriet had originally stated that by 1922 only two of the original three "Wickham" tortoises were still living at the CBG, and by the late 1900s all had died.

Furthermore, the number of tortoises at the Gardens does not directly match what we think we know. Of the "pet" tortoises on the *Beagle*, the two owned by the captain are in the British Museum, and two at the Gardens died by 1922, so where did Harriet come from? Of the two other known Brisbane tortoises one was named Tom, and was preserved long ago in the Brisbane Museum's collection. It was originally labeled as an Aldabran tortoise but information painted on its back reads: "Tom Galapagos tortoise Died 1929 Brisbane Botanical Gardens." Tom (a female) appears to be a specimen of *G. n. chathamensis* an extinct race from south San Cristobal (Chatham) Island. This race was extinct in the wild by the end of the 1800s. San Cristobal is also not one of the islands where either Darwin or his servant had obtained "pet" tortoises.

The small tortoises brought back by Captain FitzRoy to the British Museum are said to have come from Española Island, so if the records and labeling for Tom are correct it is unlikely that she was a *Beagle* tortoise who was later brought to Australia by Wickham.

However, to add to the confusion San Cristobal is one of the three islands where the *Beagle* was reported to have picked up tortoises. It turns out that the third of the "Wickham" animals was a red-footed tortoise that arrived indirectly from another part of Queensland. This implies at least one of the three tortoises at the Gardens did not come via Wickham. Or it could mean that Captain Wickham had sources for his tortoises other than from Darwin's epic voyage.

Sixth, the Australian frontier was not a likely place for a British naval captain to be dropping off tortoises. In 1842 when Wickham retired from the Royal Navy and moved to Australia, the town of Brisbane was not open for settlement. Yet if Harriet and the others were brought in at a much later date the animals could have come from anywhere. Whatever transpired in the 1800s will never be known since all of the settlement's records were destroyed in a great flood making it impossible to verify the source or even the earlier presence or absence of the tortoises.

Seventh, throughout much of the 1800s many Galapagos tortoises were transported to Australia by crews of whaling ships and others crossing the Pacific. Uneaten tortoises remaining in the ships' galleys were often adopted as pets once the ships came to port. This is a logical source for the animals that found their way to Australian zoos, parks and botanical gardens.

The only point relevant to any of this is the fact that there is no actual evidence in either Australia or England to link Harriet to Darwin. The Wickham connection is at best weak. Attempting to make the connection fit further only distracts from the original fairy tail quality of the story as it strongly suggests that connecting the dots requires a stretch in faith.

Without Wickham's involvement any connection of Harriet to the *Beagle* disappears. Yet, I don't think that one could claim with certainty that there is no connection between Harriet and Darwin, any more than we can be sure that Noah did not have a pair of Kirtland's water snakes on the Ark. Nonetheless, given what we know, most would assume both are quite unlikely.

Tracking individual living tortoises is difficult because they often outlive the people keeping the records and over time they frequently become mixed in with other individuals of their kind having quite different histories. There are dozens of examples of really old tortoises whose stated age cannot be verified.

This problem is not unique to living tortoises. For decades I worked as a curator in a natural history museum, where a large portion of my time was spent trying to match original records with the actual specimens. It seems there is a conspiracy of students, educators, nitwit administrators, and exhibits personnel who feel duty bound to disassociate artifacts from their catalogue numbers. At the museum where I worked the problem was enhanced because of gaps of 20 years or more between hiring of curators as well as a number of interim curators not interested in the historical aspects of the collections. While old by American standards, like most in North America this was a "young" museum, not even approaching the age of Harriet. The dilemma of tracking Harriet is in itself

not unusual, and even people hell-bent on making the Darwin/Harriet connection can see that the sequence of events and many of the documented facts don't quite fit. This is sad because we all so wish the story to be true.

Except for Lonesome George, no other Galapagos tortoise, probably no other tortoise, has received such worldwide notoriety in recent times. Her fame will most likely persist as reason seldom interferes when people want to believe something. For now, however, the press has pretty much put this story to rest. The public's interest has for the most part faded and this is likely the last we will ever hear of Harriet for some time.

The irony is that Harriet's actual age was probably as impressive as the one calculated through the poorly supported Darwin connection. Even if her history does not predate the 1870 documentation she was at least older than the invention of telephones, faxes, pagers, text messaging and all the other technological vermin that squander our days. Harriet's DNA indicates not just her island of origin, but that she hatched prior to the period of the extensive harvest of tortoises by whaling crews.

Several microsatellite markers show alleles in her that are not found in other Santa Cruz tortoises living today. This means she is from a time before exploitation eliminated a portion of the original genetic variation in the population. Thus, Harriet hatched prior or during the time period that Darwin visited the islands. A hatch date from before the mid 1800s is also suggested by the known history of the tortoise dating back to Brisbane Gardens. In fact, Harriet was possibly older than any of the young tortoises that came back to England on the *Beagle*.

We know from his log that Captain FitzRoy's tortoises were small, based on the growth he documented during the return voyage to England, and one would assume that other pet tortoises on the *Beagle* were of similar size. If Wickham had taken tortoises of the size of the ones FitzRoy measured back to Australia it seems likely that their shells would have shown signs of being raised in captivity. Even as recently as the 1990s most zoos had difficulty raising young tortoises without their shells' scutes pyramiding or developing other obvious deformities. Yet based on photographs Harriet's shell was flawless. Thus, if Wickham actually brought tortoises to the Brisbane Gardens in 1841 they were most likely to have been ones of at least modest size, wild origin, and thereby several decades of age. This would place Harriet's age, if she was from Wickham, somewhere over 185 years, and of course she could have been even older. The likelihood of a greater age is in part reinforced by her DNA microsatellite markers indicating that Harriet tortoise predates the extensive harvest by of whaling crews. Whaling in the Galapagos extended from 1790 to 1860, and thereby was an ongoing negative factor for tortoises for 45 years prior to Darwin's visit. Harriet's DNA

shows her to be two generations removed from any living Galapagos tortoise examined.

In our current world we have come to expect our information to be exact, and most people have little patience for rambling explanations even when the imprecise information indicates the creature's age may be more extreme than originally believed. How can you throw a birthday party when you don't have a hatch date? It's not just the day, month or year, but we can't even be sure of the decade. I wonder if she hatched on a Wednesday?

Okay, I have obsessed way too much over Harriet's pedigree and actual age. What is actually important in all this is that the passing of Harriet has caused us to pause and reflect. Close your eyes for a moment and think of all the other old tortoises, ones who still roam about remote islands, and others in the crawls of various zoos, who are every bit as old as Harriet, and some that are certainly even older. They are individuals who successfully hid when pirates and crews from whaling ships came and removed their neighbors, mates, rivals, offspring, parents and siblings. Living on these same islands are also tortoises that were later passed over by collectors for zoos because they had scarred shells or were already too large and old to be of use in exhibits. They are like the wolf trees in a young forest, left by loggers because their wood was twisted or their trunks hollow, not worth the effort of pre-chainsaw labor; living trees that give us some indication of a forest that once was. The ancient reptiles lived through all our foolishness and somehow survived it. These anonymous old tortoises all lack growth rings to document their ages, scribes and wishful public relations staffs to promote their stories, or the "advantages" of being blessed with human names. Yet, their persistence is every bit as remarkable as Harriet's, maybe more so as the ones living in the wild are evidence of the effective genetic adaptations that Darwin first demonstrated to the world. Adaptations that allowed these tortoises to grow to large sizes and prosper to old ages on remote, harsh islands. These places are the very insular sanctuaries that in former times programmed the genetics of Galapagos tortoises. Think of what these tortoises witnessed, or what their ancestors had witnessed. Tortoises, ones alive today, that shared a world of sailing ships, and the election of Abe Lincoln. Creatures already old by our standards when World War II overran the Pacific, and when Tasmanian tigers could still bite zoo curators in the ass.

Each of these ancients should be afforded the reverence and quiet respect of existing medieval art. Like their inanimate counterparts, these tortoises were spared from our innate urge toward overuse, destruction and replacement. This composite survival of artifacts, both living and otherwise, is the world's tangible autobiography.

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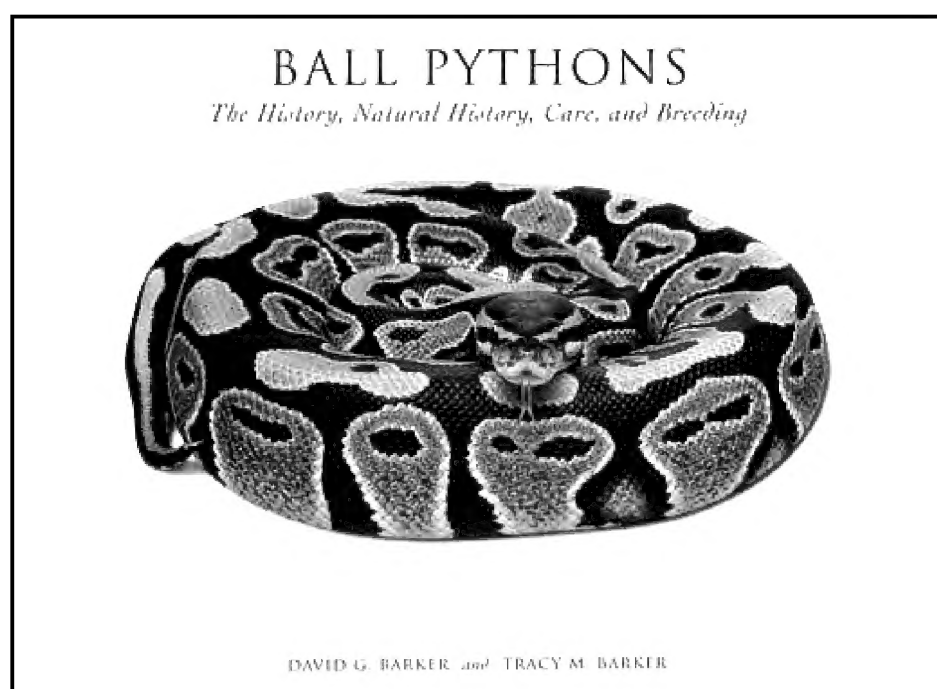
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**Book Review: *Ball Pythons: The History, Natural History, Care and Breeding*
by David G. Barker and Tracy M. Barker
2006. 320 pp. Boerne, TX. VPI Library. ISBN: 0-9785411-0-3**

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Ball pythons (*Python regius*) are riding a crest of popularity due to the tremendous variety of designer morphs as well as the incredible prices—often tens of thousands of dollars—that an individual of a dramatic new morph can bring. Their small size and gentle nature makes them even more appealing. Ball python enthusiasts initially will be impressed with *Ball Pythons: The History, Natural History, Care and Breeding* because it is full of stunning color photographs of dozens and dozens of morphs (including one on the last page of a new morph called “latte” that hatched out on the day the book went to press). However the real value of the book is in the text. The topics are practical and focused on real issues a snake keeper will encounter. There is something here for every snake keeper and breeder, not just those focused on ball pythons, and even the

most experienced keeper will learn something reading this terrific book.

David and Tracy Barker are well known in the herpetological community as skilled biologists and python breeders. They own Vida Preciosa International, Inc., a large python breeding facility in Texas. This second Barker book is subtitled *Pythons of the World Volume II*, following their first book on Australian pythons (Barker and Barker, 1994). The Barkers’ unique combination of scientific background and vast herpetocultural experience allow them to present practical and accurate information. I find their writing style to be uncommonly readable, interesting and pertinent.

While there are topics of interest to all snake keepers, the majority of the book focuses on ball pythons as might be expected. Chapter one, “Introducing the Ball Python,” covers the first historical European descriptions of pythons, systematics, habitat and natural history. Chapter two is “The Relationships of Humans and Ball Pythons in Africa.” Chapter three is “The Physical Ball Python.” The Barkers do not describe traditional gross anatomy—heart, lungs, liver, stomach, kidneys—as it has little relevance to snake keepers. Instead they describe external structures that a keeper might observe, including structures of the oral cavity. Average and record lengths and weights are listed, and there is a useful diagram relating internal organ position to the ventral scales. For instance, the heart of females is deep to the ventral scutes numbered 130–138 anterior to the cloaca. Intelligence is discussed with the conclusion that snakes are generally “more aware and much more capable of learning than they are traditionally credited with being.” The senses of chemoreception,

taste, hearing, touch, infrared vision and vision are given significant attention. Cloacal and reproductive anatomy and a detailed look at many methods of sex determination round out the chapter.

An entire chapter is devoted to “Skin and Shedding,” including descriptions of shedding, shedding problems, and eye caps, as well as the environmental conditions for shedding. “The Basis of Color and Pattern” covers appearances, color, chromatophores and pigments, and includes a four-page glossary of color terms.

The heart of the book is the chapter titled “The Morphs.” The Barkers tell how morphs are named and divide them into wild morphs (found in nature as the result of a single mutation) and designer morphs (created in captivity by breeding two or more wild morphs). The list of wild morphs is described as incomplete because there are so many and not all may have been observed, yet by my count 57 wild morphs are covered including the history and description of each. As one might imagine, there are an infinite number of possible designer morphs, and the Barkers discuss them in groups: albino designer-morphs, supers, leucistic balls, pastel designer-morphs, snows, and so on. For instance, there are more than half a dozen genetic lines of leucistic ball pythons, all covered together. The chapter ends with 54 pages of color photographs in a section called “Alphabet of Ball Python Morphs.” The images of various morphs are arranged alphabetically: several pages of “A” depict various albinos, amber and axanthic morphs, while “B” shows black-pastel, black-striped, banana, barbed-wire-spider, butterball, black-headed, bumblebee, burgundy-albino and butter morphs. There are multiple images per page, and the backgrounds have been removed with Photoshop so all the images have a similar appearance and the reader can focus on the beautiful snakes themselves.

The remaining chapters cover topics that are important to all snake keepers and breeders. Even though this book focuses on ball pythons, the information it presents is applicable to other species. “Choosing a Ball Python” has a lot of good advice, including why to choose a ball python (or why choose any snake), where to buy one, and how to tell whether the one you are considering was captive bred, captive hatched or wild caught. It describes how to pick up a ball python and examine it for signs of illness and parasites. The Barkers give very sound advice on guarantees and warranties and how to complete a successful transaction. I have no doubt that they have dealt with many situations in their years of managing a large python breeding facility, and their reputation for quality and honesty is stellar. As a result their advice is realistic and practical. These are especially important topics when a single snake may cost thousands of dollars, but a bad transaction can be emotionally upsetting even when the snake is relatively inexpensive.

“Transporting Ball Pythons” discusses containers, shipping boxes, shipping by overnight delivery and air cargo, traveling with snakes, and importation and exportation. “The Ultimate Snake Room” discusses the importance of having an escape-proof room, as well as addressing room (as opposed to cage) temperatures, humidity, lighting, electrical supply, and clean-

ing areas. Safety issues concerning smoke, fire and overheating are addressed, as is the need for an emergency plan in the event of power loss or catastrophic weather. These issues might seem like overkill for the owner of a single snake, but many keepers who start with one end up with many more. The chapter clearly explains how to set up a bigger collection successfully. “Snake Room Equipment and Supplies” continues the theme of setting up a collection and presents a very comprehensive list.

“Snake Cages” goes over size, construction, openings, lighting, cage furniture, racks and shelves, systems, shelters, substrates and escapes. An entire chapter covers “Temperatures” including thermoregulation, gradients, basking and complications. “Maintenance” discusses cleaning, disinfection, water bowls, quarantine, and the like in significant detail. These topics are often glossed over by the casual keeper. “Feeding” is a strong chapter, starting with a discussion of the often repeated myth that ball pythons are universally reluctant feeders. What to feed, definitions of various rodent sizes (“fuzzies,” “hoppers”), purchasing feeder rodents, raising them, feeding live food and dead food, first meals, growth, obesity, anorexia and force-feeding round out the chapter. One chapter is titled “Snake Bites.”

“Breeding Ball Pythons” and “Eggs, Incubation and Hatching” are two more strong and detailed chapters chock full of great advice on “how to.” Reproductive anatomy and physiology, different methods, reasons for reproductive failure, reproductive husbandry, feeding schedules, temperatures, schedules and nest boxes fill the first chapter. Clutch size, infertile eggs, incubation, media, incubators, damaged eggs, and assisting hatchlings complete the second.

“Medical Matters” discusses diseases common to ball pythons. The Barkers avoid the common mistake of describing diagnosis and treatment, topics that are far too complex to cover adequately in a book such as this. Instead they describe how to recognize common symptoms and determine when the reader’s snake can be treated with appropriate first aid and when a veterinarian should be consulted. Again, the Barkers’ vast experience with thousands of snakes over decades allows them to offer practical and accurate advice. An entire chapter is devoted to “Eradicating Snake Mites.”

The final chapter is “Basic Genetics for Python Breeders.” Appendix I is an extensive glossary of anatomical terms and Appendix II is a list of over 200 ball python morphs in table form. The book ends with an extensive bibliography, list of literature cited, and index.

The illustrations are a strong point of this book. In addition to the extensive “Alphabet of Ball Python Morphs” photo section in the middle of the book, there are quality images on almost every page along with a number of very nice line drawings by David Barker. As impressive and beautiful as the pictures are, the text is the best part of this book. The Barkers have a way of covering each topic thoroughly, logically and clearly. They rely on their vast experience as well as the literature. In herpetoculture there is little hard data and much of what is known is based on experience. The Barkers’ scien-

tific background allows them temper what has been published with “this is what works for us.” They have a nice way of presenting all available options and pointing out the pros and cons of each choice, leaving the reader to choose methods that would work in his or her own circumstances. For instance, several choices are offered for both cage substrates and snake mite treatments. Many books on herpetoculture are written in a very opinionated and preaching style—the old “either you’re with us or you’re against us” dichotomy—but the Barkers’ even-handed and nonjudgmental approach makes them enjoyable to read.

I have few complaints with the book and find the layout pleasing to the eye; it is logically arranged and free of obvious typos. However, the book is an unusual size at 12 inches wide by 10¼ inches high. As a result it fails to fit on my bookshelf because it sticks out several inches beyond my other books.

Pythons of the World Volume I, Australia is slightly smaller at 11¼ inches wide, but is still wider than the average book and thus has spent the last 12 years on end between other books on my shelf. This prevents viewing of the book’s spine and tends to damage the dust jacket. The captions of illustrations are semi-transparent and faded, probably to set them off as different from the regular text, and as a result they are very difficult to read.

I found only one factual error of significance. In the Medical Matters chapter under intestinal parasites (p. 258) a reference from 1993 is quoted to state that the dewormer fenbendazole (Panacur®) is safe at 5,000 times the recommended dose and that no reports of deaths from its use in reptiles had been observed. In fact fenbendazole has a narrow margin of safety. It affects quickly dividing cells such as intestinal epithelium and bone marrow, resulting in gastrointestinal signs, immunosuppression, and in some cases death. A number of reports of toxicity in mammals, birds and reptiles are in the literature (e.g., Alvarado et al., 2001; Neiffer et al., 2005). This particular reference is outdated and inaccurate and could lead keepers to mistakenly conclude that it is OK to dose their snake with “some” fenbendazole rather than carefully calculating the dose based on body weight. It was just this approach that killed four Fea’s vipers (*Azemiops feae*) in one report (Alvarado et al., 2001).

Those complaints aside, this is a large, beautiful, book that meets the usual high standards of David and Tracy Barker. The images are gorgeous and the text is both well written and full of useful and practical advice on keeping and breeding snakes in general and ball pythons in particular. Any snake keeper would enjoy and benefit from this book and it should be a best-seller.

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Notes on the Reproductive Biology of the Variegated Skink, *Trachylepis variegata* (Squamata: Scincidae), from Southern Africa

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Abstract

Reproductive organs of the variegated skink, *Trachylepis variegata*, from southern Africa, were histologically examined. Adult females were significantly larger than males. Females with enlarged ovarian follicles or oviductal eggs were found in January, February and October–December. Mean clutch (litter size) was 2.8 ± 1.7 SD, range = 1–6. The smallest reproductively active female was 34 mm SVL. Testes of males contained sperm throughout the year. The smallest reproductively active male was 30 mm SVL. Two other species of skinks from southern Africa, *Trachylepis striata* and *T. quinquetaeniata*, also exhibited continuous spermiogenesis (Simbotwe, 1980). Whether year-round spermiogenesis is characteristic of southern African skinks merits examination of additional species.

The variegated skink, *Trachylepis variegata* (formerly *Mabuya variegata*), is found in most of the African subcontinent extending into southern Angola but is absent from the southern Cape, KwaZulu-Natal and Mpumalanga; it is viviparous (Branch, 1998). To date there is only anecdotal information on its reproduction. The purpose of this note is to add additional information on the reproductive biology of *T. variegata* from a histological examination of museum specimens.

Twenty adult female *T. variegata* (mean snout-vent length [SVL] = 42.7 ± 5.1 mm, range = 34–53 mm) and 33 adult males (mean SVL = 38.0 ± 4.3 mm, range = 30–50 mm) were examined from the herpetology collection of the Natural History Museum of Los Angeles County (LACM), Los Angeles: **Botswana:** Kgalagadi District, 11 km S Tsabong (26°08'S, 22°28'E) LACM 80630, 80631. **Namibia:** Erongo Region, 47 km S Wilhelmstal, (21°58'S, 16°21'E) LACM 77575, 77578, 77579. Erongo Region, Strathmore Diamond Mine, 37 km N Unjab River, Skeleton Coast Park (18°09'S, 12°14'E) LACM 127498. Karas Region, 46 km N, 17 km E Aroab, (26°22'S, 19°49'E) LACM 80602, 80606. Karas Region, 2 km S. Luderitz (26°41'S, 51°08'E), LACM 77108, 77112, 77113. **Republic of South Africa:** Northern Cape Province, 120 km N, 54 km W Upington (27°22'S, 20°43'E) 80527, 80530, 80531, 80533, 80535, 80538, 80540, 80545, 80547, 80548, 80552, 80554, 80557, 80558, 80564, 80568, 80569, 80571, 80572, 80574, 80575, 80578, 80579, 80581, 80583–80585. Northern Cape Province, 29 km S, 40 km E Rietfontein (27°00'S, 20°27'E) LACM 80589, 80592. Northern Cape Province, 121 km N, 16 km E Upington (27°22'S, 21°25'E) LACM 80611, 80612, 80615, 80617, 80623, 80624, 80628, 80629. Northern Cape Province, 31 km N, 100 km E Upington (28°13'S, 22°16'E) LACM 80598, 80600, 80601. Northern Cape Province 129 km N, 65 km W Upington (27°17'S, 21°54'E) LACM 80595, 80597. Specimens were collected 1969–1972 by Eric R. Pianka except for LACM 77108, 77112, 77113, 77115, 77575, 77578, 77579, 77580, 127498. Oviductal eggs were removed from the Pianka specimens; their mean value is in Pianka (1986).

Gonads were dehydrated in ethanol, embedded in paraffin,

sectioned at 5 µm and stained with Harris hematoxylin followed by eosin counterstain. Enlarged ovarian follicles (> 3 mm) or oviductal eggs were counted; no histology was done on them. Male and female mean body sizes (SVL) were compared with an unpaired *t*-test and the relation between female body size and clutch (= litter) number was examined by linear regression analysis using Instat (vers. 3.0b, Graphpad Software, San Diego, CA).

The *T. variegata* female body size (mean SVL) was significantly larger than male body size (unpaired *t*-test, *t* = 3.5. *df* = 51, *P* = 0.001). The smallest mature female *T. variegata* (early yolk deposition = secondary yolk deposition *sensu* Aldridge, 1979) measured 34 mm SVL (LACM 80575). Table 1 depicts monthly changes in the ovarian cycle. Females with enlarged ovarian follicles or oviductal eggs were found in January, February and October to December. Females with corpora lutea indicating a recent ovulation were found in February and October. Mean clutch (= litter size) for 8 females was 2.8

Table 1. Monthly changes in the ovarian cycle of 20 *Trachylepis variegata* from southern Africa.

Month	<i>n</i>	Inactive	Yolk deposition	Follicles > 3 mm or oviductal eggs	Corpus luteum
January	3	0	1	2	0
February	3	0	0	2	1
May	1	1	0	0	0
July	1	1	0	0	0
August	3	2	1	0	0
October	5	1	1	2*	1
November	3	0	0	3*	0
December	1	0	0	1	0

* Oviductal eggs.

** Two females contained squashed enlarged eggs that could not be counted.

± 1.7 SD, range: 1–6. Pianka (1986) reported a litter size of 2.0 for 13 *T. variegata* females. FitzSimons (1943) reported 4–12 (usually 4–8) young are born in summer. De Waal (1978) reported 2–4 young were produced; a female collected in November contained four well-developed embryos and one from December contained three partly developed embryos. Haagner (1995) reported on two gravid females collected on 11 December. The first female (SVL = 44 mm) gave birth to three young on 5 January. The second female (SVL = 48 mm) gave birth to one stillborn neonate before dying; on necropsy three more developed young were found. Linear regression analysis revealed the relation between female body size and number of eggs was not significant ($P = 0.31$); however, this may reflect my small sample size.

There may be significant geographic variation in the reproductive cycle as Branch (1998) reported births of litters (2–4) occurred January–March; however, birth may occur in August in the Namib Desert. It is worth noting that all gravid females in my samples from October–December (Table 1) were from Namibia. Examination of additional females are needed to resolve this question. The number of broods produced per reproductive season by *T. variegata* females is not known. However, Simbotwe (1980) suggested that females of other species of southern African skinks, *Trachylepis striata* (as *Mabuya striata*) and *T. quinquetaeniata* (as *Mabuya quinquetaeniata*) from Zambia may produce two broods per year. Examination of additional samples of *T. variegata* from different parts of its range will be required to ascertain the amount of geographic variation exhibited in its reproductive cycle.

Testes from all ($n = 33$) males examined were undergoing spermiogenesis (lumina of seminiferous tubules lined by spermatozoa or rows of metamorphosing spermatids); January ($n = 10$), February ($n = 3$), April ($n = 5$), May ($n = 1$), July ($n = 6$), August ($n = 1$), September ($n = 4$), October ($n = 3$); all epididymides contained sperm. Thus, males were capable of insemination during all months sampled, which may explain the presence of gravid females during five months of the year. The smallest reproductively active male (LACM 80533) measured 30 mm SVL. Simbotwe (1980) reported that mature males of *T. striata* and *T. quinquetaeniata* from Zambia similarly contained spermatozoa throughout the year. The lacertid *Meroles anchietae* from Namibia also showed continuous spermiogenesis. In contrast, males of several species of lacertid lizards from southern Africa: *Pedioplanis namaquensis*, *P. lineoocellata* and *Meroles cuneirostris* (Goldberg 2006a, b; Goldberg and Robinson, 1979) and the gekkonids *Pachydactylus bibronii* and *Chondrodactylus angulifer* (Flemming and Bates, 1995; Goldberg, 2006c) underwent brief periods of regression (seminiferous tubules contained mainly spermatogonia and primary spermatocytes) in their testicular cycles. Testes of the lacertid *Pedioplanis burchelli* were inactive for a longer period (January–August) in southern Africa (Nkosi et al., 2004). Elucidation of the variations exhibited in the testicular cycles of lizards from southern Africa must await examination of additional species.

Acknowledgment

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Program Notes from the July CHS Meeting

by John Archer

Some readers may know Bob Henderson, senior curator of herpetology at the Milwaukee Public Museum, from his numerous books, multitude of articles, or, if you've been around the CHS longer than I have, from his ten other presentations to our society, the last of which was delivered more than fifteen years ago! He mentioned that he was somewhat reluctant to talk about his favorite subject, tree boas, because he felt that we may be bored with the subject, which would explain the fifteen-year gap. Fortunately for us, he decided to talk about tree boas anyway, and, with help from his wife who put together his PowerPoint presentation, he approached the subject from several angles. His wife, no doubt gleefully, labeled the show "Bob's Hodgepodge."

The show opened with a full-screen photo of a gorgeous gecko moving across the screen accompanied by oohs and ahhs from the audience. It was a new species of the genus *Gonatotodes*, day-active geckos found mostly on the mainland in Central and South America. Bob spread his thumb and finger about an inch-and-a-half to show its true size. Four specimens have been found in leaf litter on Union Island in the Grenadines, a string of islands in the Lesser Antilles between St. Vincent and Grenada. These are the first of this genus to be found in the West Indies. I learned through my research that the name of the new gecko should be announced later this year.

The month before he spoke to us, Bob had been to St. Vincent supporting an R.E.U. project. R.E.U. stands for Research Experience for Undergraduates. Undergraduate students from around the world apply to these programs, and if accepted, spend much of the summer learning and doing field work in great field locations such as St. Vincent with seasoned field workers such as Bob. For three weeks Bob and two students surveyed St. Vincent for tree boas, specifically *Corallus cookii*.

After introductory photos of the students and St. Vincent, the screen switched to all black, except for a small, slightly reddish dot of light in the center. The picture was the search image used to find tree boas at night with a head lamp. The eye shine can be seen up to 150 feet away. Of course, in doing population studies, the snake itself had to be seen, but the initial sighting was that single dot. Eye shine could be a spider, an opossum, or a cow. If you see two dots, it's probably not a snake. If it moves, it's probably a cow, and if it blinks, it's certainly not a snake!

Generally, good tree boa habitat is tall forest remnants with contiguous tree canopy, no street lights, unpaved roads, light day traffic and no night traffic. The opposite of any of those conditions should degrade the habitat. Surveys were conducted in a variety of habitats, and generally the results were as expected. A gorgeous botanic garden with manicured lawns and widely spaced trees yielded no snakes. A banana plantation with a few scattered mango trees yielded no snakes. A paved road bisecting a pasture with a narrow line of tall introduced trees on both sides, street lights, and heavy traffic yielded . . .

tree boas within ten minutes. Ain't biology grand?

But the biggest surprise was the suburbs of the capital of St. Vincent, Kingstown. In an area not unlike any suburb anywhere, the research team had its highest single night encounter rate! As they wandered through the houses trying not to be conspicuous while prowling through backyards with headlamps, they were astounded at the number of tree boas, one even crawling along a chain link fence. Anoles were everywhere, and the abundant food along with a contiguous canopy of mango, breadfruit, papaya and other trees in nearly every yard probably accounted for the high densities of boas. At the end of that night Bob was bloody and smelled slightly musky, which is his definition of a good night hunting tree boas!

Next Bob took us to Grenada and showed several photos of *Corallus grenadensis*. At the lower altitudes this snake tends to be light gray, but as the altitude increases, the colors get darker. A picture of a high altitude *C. grenadensis* showed a very dark snake. Another photo showed another very dark snake, only this snake was *C. cookii* from St. Vincent. Up until now, *C. cookii* had not shown any altitude variation in color, and this was the first dark snake Bob had found on St. Vincent. A case of convergent evolution in the making?

Bob then took us to the British Virgin Islands and the island of Guana, a private resort island where the rooms rent for eight hundred to one thousand dollars a night. Each year during the month of October the island is open to scientists for research. Room and exquisite meals are provided, but one has to concentrate on research. Bob did much of his on *Alsophis portoricensis*, a mildly venomous diurnal racer, typically fast and bitey. He has been microchipping these two-and-a-half- to three-foot snakes for two years, and the mystery of these racers is why every one has a damaged tail. Bob surmises land crabs or birds, leaning towards the crabs as the culprits. I'm sure that he'll be back to continue his studies in the future. Where else can a herpetologist do field work from a golf cart?

Bob threw in a slide of a nine-foot-long racer, *Alsophis anomalus*, found June 24 in the Dominican Republic and unfortunately killed. We were looking at the largest specimen of *A. anomalus*, which is the largest species of *Alsophis*, which is the largest colubrid in the Caribbean.

Next Bob jumped to the photos of Grenada before and after Hurricane Ivan devastated the island and many of his research sites in 2004. Soon after the hurricane, Bob had to use a chain saw to clear some of his transects, and while they found tree boas in the canopy of trees on the ground which still had leaves, once the trees dropped their leaves, the boas left. He still has not determined the effects of the hurricane on the boas, since the decline he is seeing may simply be a continuation of a general decline in tree boas he's documented over the years.

He ended his talk with his efforts to track geographic variations in the emerald tree boa, *Corallus caninus*, by searching museums worldwide for documented specimens, particularly as

to localities. With slides showing various color combinations and ranges, Bob showed us why he thinks that *Corallus caninus* will be split into two or three species in the future.

Bob finished by taking questions. In answer to the question of how to find tree boas in daylight, Bob said, "Ask a local!" We're grateful he took the time to speak with us, and hope he doesn't wait another fifteen years to return.

Bull. Chicago Herp. Soc. 41(9):171, 2006

Program Notes from the August CHS Meeting

by John Archer

I admit that I'm fond of travelogues. Even vacation slides or pictures of someone's trip to Aunt Evelyn's in Ohio can hold my interest, but I think that I've developed some rules for what makes a really good travelogue, and Mike Redmer's August presentation managed to hit every one.

A good travelogue allows you to relive the experience, making you feel not only as though you are traveling with the speaker, but that you want to go back soon. It requires pictures not only of the main topic (frogs) but also the context of the main topic. It has to have personal revelations and humor. World-class pictures are simply a huge plus.

So, in strolls Mike Redmer, a 30-year veteran of the CHS and habitat restoration coordinator/ herpetologist at U.S. Fish and Wildlife, who, in an attempt to recreate some of the early CHS slide-show travelogues, presents "Pilgrimage to Panama in PowerPoint—an Old-fashioned CHS Travelogue sans Slides."

Mike, referring to old CHS board debates about whether or not the society should buy a computer and projector, starts out by saying what the audience shouldn't see in his presentation: scratched slides, hair or dust obscuring slides, upside-down slides, or jammed slides (see a trend?). Then he lists his disclaimers: he is not an expert on Panamanian frogs or chytrid fungus and he was in Panama for selfish reasons. His goals are to tell the audience about his trip, and to tell us why we may never be able to duplicate his trip. And his story has a sad ending.

In June, Mike traveled to Panama City aboard the finest airline in the world at the invitation of Dr. Erik Lindquist, a long-time friend of his and professor of biology at Messiah College near Harrisburg, Pennsylvania. Within three hours he left the modern city of Panama City and by 10:00 P.M. that night had taken beautiful photos of spectacular, and not so spectacular, rainforest animals near Gamboa, Panama. Photos of (ubiquitous) red-eyed treefrogs, *Agalychnis callidryas*, painted treefrogs, *Hyla ebraccata*, and túngara (the sound they make) frogs, *Physalaemus pustulosus*, are flashed on the screen. We're in the rain forest, and it's only the first night!

Mike, Dr. Lindquist, and his biology students, guided by Edgardo Griffith, a young Panamanian biologist dedicated to saving his country's amphibians, proceeded to El Valle, home of the Panamanian golden frog, *Atelopus zeteki*, and the main

object of Mike's trip. He shows photos of the first golden frog seen as they drive to the habitat of these frogs in the cloud forests which cover the rim of the extinct volcano in which sits El Valle. First pictures of this frog are from a distance, but still impressive. Shots follow of red-handed tree frogs, *Hyla rufitela*, coronated tree frogs, *Anotheca spinosa*, marsupial frogs, *Gastrotheca comuta*, and *Eleutherodactylus* spp. frogs, otherwise known to herpetologists as LBFs (or little brown frogs).

Then Mike takes us to Barro Colorado Island, arguably the most studied tropical rain forest in the world and site of the Smithsonian Tropical Research Institute, where signs warning of *cocodrilos* greet them on the dock. We get to see pictures of velvet toads, *Bufo margaritifer*, bats, anteaters, howler monkeys, and Mike's wet and dirty laundry. We're regaled with tales of army ants, smoky jungle frogs, *Leptodactylus pentadactylus*, lizards which bite like tokay geckos, and Mike's wet and dirty laundry. Also he includes a picture of the one snake that he saw on his entire trip, a cat-eyed snake, *Leptodeira septentrionalis*.

Mike was next privileged to visit the Embara indigenous tribe in Panama, a native tribe which, after being forced to live in the city by the Panamanian government for years, asked for and received permission to return to a way of life closer to their traditional ways. We went along via some exciting pictures.

Mike then returned to El Valle and the Panamanian golden frog. This gorgeous, bright yellow and black frog is Panama's national symbol, but the reason for his trip was to take some of the last photos of this animal while it still existed in the wild. The chytrid fungus, *Batrachochytrium dendrobatidis*, is moving south through Central America, driving to extinction dozens of species of amphibians, and in June of 2006, had reached El Valle. By Mike's talk in August, the Panamanian golden frog was almost certainly extinct in the wild. Captive breeding efforts have been successful for *A. zeteki* and other frogs, but saving all the species this fungus is devastating is impossible, and many species are going extinct before they can be scientifically described. If those of us with an interest in herpetology won't get involved, who will? Thanks, Mike. A great travelogue, sans slides, and a sad ending indeed.

HerPET-POURRI

by Ellin Beltz

Too many herpetological stories!

After several hours of opening mail and comparing what was mailed to me with the electronic gatherings of 12-year contributor Wes von Papineau, I found that even my skillful network of collectors misses interesting stories. This is the second column in a row where the backbone of the material is from Wes; if someone else found the story, too, I'll put their name at the end of the paragraph. Next month, back to those letters, clippings and wonderful post cards sent in by you and all my other super contributors!

Amphibians in a lot of trouble worldwide

"The World Conservation Union released its 2006 Red List of 16,119 species of vertebrates, invertebrates, plants, and fungi threatened with extinction. A third of frog, toad and salamander species are threatened. In a study this year published in the journal *Nature*, researchers concluded that global warming has dramatically accelerated the spread of diseases among frogs, especially in the tropics. It is believed that two-thirds of the 110 species of harlequin frogs in the American tropics have died out in the last two decades." [Boston Globe, May 6, 2006]

Was she glad — or sad?

The lady tortoise who wandered off on her partner of 55 years in England has been found after 12 days away. She'd managed to get a mile away before being found by a dog in a back yard of a farm in Devon. The lady who owned the farm called the tortoise owners right away because she'd seen the news stories of the lady tortoise's walkabout. [The Sun (London, U.K.) June 16, 2006 — also from Bill Burnett's Aunt Peggy]

Iguana give them a medal

"Firefighters went back into a burning house from which a mother and her three young children had just escaped to save the lives of the family's three pet iguanas. The family watched as the firemen emerged from the blaze in Bloxwich clutching the reptiles which they had plucked from their glass cases in the lounge," according to the April 18, 2006, *Birmingham Mail*. The smallest one came out tank and all. It was later determined an electrical fault in a clothes dryer started the fire.

An expensive obsession

What is it with the fascination of reptiles? Even after the state of Victoria, Australia, had a non-native reptile amnesty in 2004, they're still finding illegal animals. Most recently taken were a two-meter boa constrictor and a one-meter cornsnake. The owner faces up to \$110,000 (Australian) in fines and up to five years in jail. [(Melbourne, Australia) *Herald Sun*, May 6, 2006; also from Raymond Hoser, the Australian Snake-Buster]

Keen-eyed Customs Agents

A man bound for Singapore "was detained at the Chennai airport. The passenger was moving about suspiciously and on interrogation, it was found that he was trying to smuggle out Chennai star tortoises." He was arrested by Indian Customs. [News Today (Chennai, India) May 7, 2006] One day later,

alert Indian Customs agents in Madras "seized 197 endangered star tortoises headed for Thailand, to be sold as pets or as a rare delicacy . . . on a tip, as [an Indian citizen] was about to depart for Bangkok. They examined his bags and found 197 endangered star tortoises neatly packed in his luggage. . . . Adult tortoises would bring about \$4,000 on the black market," reported the *India Gazette*, May 8, 2006.

Plain speaking from a wildlife program

"What is small, green and cute, but makes a terrible pet? The answer: a turtle. That's right. Not only is it illegal to own a turtle in Tennessee, but also by nature, they are very unhappy creatures when kept in an aquarium. 'Turtles live their whole lives in a 2-mile-square habitat range,' explained . . . [a] staff member of the Wilderness Station at Barfield Crescent Park. 'They live anywhere from 50 to 80 years, and if you take them out of their home, they spend the rest of their lives trying to get back home.'" [Murfreesboro, Tennessee *Daily News Journal*, May 9, 2006]

Toads in Motion

- An extremely large cane toad, *Bufo marinus*, was captured in the Northern Territory. Measuring nearly 17 centimeters long (6.6 inches) and weighing 564 grams (about a pound and a quarter), the monster will not be killed but kept as a warty mascot for NT FrogWatch, an organization which captures and kills toads. [News.com.au, May 21, 2006]
- The front line of the cane toad invasion is now about 100 kilometers (61 miles) from Western Australia. The Stop the Toad Foundation is leading "toad-busting" runs to stop the invaders; half of their catch is female. They find that most of the toads hop along existing roads rather than crossing virgin bush. [News.com.au, July 2, 2006]

Take two tetrapods and call me in the morning!

"The [Japanese] city of Toyohashi, Aichi Prefecture, began removing [240 four-ton] concrete breakwater tetrapods . . . so sea turtles will be able to come ashore to lay their eggs. . . . A 50-km stretch of the Pacific shore, including part of Toyohashi, is a vital breeding ground for endangered loggerhead turtles. However, many turtles have been frustrated by the tetrapods and return to the sea before laying their eggs during the egg-laying season from May to August. It is the first removal of a breakwater for ecosystem conservation, an official at the Land, Infrastructure and Transport Ministry said," according to the May 30, 2006, *Japan Times* of Tokyo.

Giant turtles make giant nests

"A six-foot, nearly 1,000-pound leatherback sea turtle built a nest just north of the Marriott Oceanfront Resort here on Sunday. Only six leatherback nests have been recorded on South Carolina beaches in the last 10 years, according to the state Department of Natural Resources. . . . The turtle's 77-inch-wide tracks led up the beach and into a midlevel dune, where it dug a nest sometime before dawn Sunday. . . . [The co-chairman of

the Sea Turtle Protection Program said] ‘The area where it nested looked like a small bulldozer went through’. . . . Leatherbacks build six to nine nests per season. They lay about 80 fertilized eggs the size of billiard balls. There are also 30 “spacer” eggs in each nest, which will not hatch and are in place to provide cushion for the fertilized eggs.” wrote the Orangeburg, S.C., *Times and Democrat* on May 10, 2006.

More Successes for Madras Croc Bank

The unusual Indian soft-shelled turtle, *Chitra indica* is facing immense poaching pressures as even its lower shell can be used in food. Harry Andrews, director of the Madras Crocodile Bank, said “Poachers mostly from the [Indian states of] Uttar Pradesh, Madhya Pradesh and West Bengal smuggle it abroad via Bangladesh.” He added that for the first time, “The Madras Crocodile Bank . . . and the Kukrail Endangered Breeding Centre . . . in Uttar Pradesh have planned the program for breeding this species, found rarely along river Chambal in Madhya Pradesh and Uttar Pradesh,” according to the Chennai, India *Hindu*, June 25, 2006. *The New Kerala* (India) reported that the Croc Bank is really on a roll with its turtle breeding programs; they’ve also successfully released 400 hatchlings of *Kachuga kachuga* in their native habitat and 250 hatchlings of *Kachuga dongoka* are being head-started. [June 23, 2006]

Raid nets a dozen

Agents from the Tennessee Wildlife Resource Agency served a warrant at a rural home, finding ten rattlesnakes, a cobra and an alligator as well as 25 or so non-venomous and not illegal animals. The owner of the home had none of the required permits for keeping the animals. [WKRN (Nashville, Tennessee) July 11, 2006]

Range extensions

- Rumors abounded the Aesculapian rat snake had slipped out of Colwyn Bay Mountain Zoo, and was breeding in the wild. Unique footage will be shown on BBC1 Wales’ Iolo’s Safari tonight, proving the tales are true. Latin name, *Elaphe longissima*, its predecessors arrived during the mid 1960s, when the founder of the Welsh Mountain Zoo, Robert Jackson, imported reptiles from Italy. [Conway, U.K. *Daily Post*, May 17, 2006] Aesculapian snakes have naturalized around the zoo following the escape of a pregnant female 40 years ago. The zoo realized they were breeding in the 1970s and assumed they were dependent on the zoo’s buildings for warmth as well as feeding on mice and rats. “There is no evidence to suggest they are harmful at all to the environment in the area,” said one researcher. [BBC News (London, U.K.) June 23, 2006]
- Tokyo’s *Mainichi Daily News* reported that “A dangerous alligator snapping turtle was found on a sidewalk [in Tokyo] at around 7:05 A.M. . . . Police . . . rushed to the scene and managed to capture the turtle. Local police said the turtle is an alligator snapping turtle, which can become aggressive when threatened. They suspect it had been kept as a pet and are looking for its owner. Alligator snapping turtles originate in southeast America. They are omnivorous and have sharp teeth, which can cause serious injury. Permission from prefectural governors is needed to keep them in Japan.” [June 24, 2006]

Alligators caiman soon bayou!

- A five-foot-long, six-year-old American alligator was discovered in Pottstown, Pennsylvania, at five in the morning by a man delivering newspapers. The gator hissed and lunged. Later it was arrested by the local police and booked with a photo as “Al E. Gator” before being transferred to a wildlife center in Wilkes-Barre. The rehabilitator speculates the animal was an underfed pet as it was far too skinny for its size and age. [*The Mercury* (Pottstown, Pennsylvania), June 23, 2006]
- Meanwhile, a three-foot-long alligator was seized from a Maine home and the owners cited for illegal possession without a permit. The alligator was purchased in Rhode Island for \$100. [WLBZ (Bangor, Maine) May 9, 2006]
- Colorado Springs police found a 3-foot-long caiman guarding an indoor marijuana garden, planted around the 300-gallon stock tank in which it lived. Earlier this year, an 11-foot red-tailed boa was confiscated from a methamphetamine lab in Denver and a 7-foot python in Colorado Springs. Both animals were put down due to overexposure to illegal drugs. Curiously, in Colorado Springs, the caiman was legal; the marijuana — of course — was not. [(Colorado Springs, Colorado) *The Gazette*, July 7, 2006]

Once revered, now feared

The Times of India [New Delhi - June 23, 2006] reported “With the onset of rains, snakes crawl out of their holes and slither to the surface in search of, dry ground. And, they’re ending up in the oddest places — shoes, kitchens, under beds and of course the storerooms. . . . ‘Help, there are snakes in the washing machine.’ This is just one of the distress calls made to a snake helpline in the city, as locals run helter-skelter trying to cope with the reptile menace.” The snake catcher reported that “A resident of Post and Telegraph Colony near Vanivihar nearly fainted when he found five cobras in his washing machine.” His helpline “has relocated over 3,000 snakes, including cobras, vipers, kraits, ratsnakes, watersnakes and wolfsnakes, over the past three years.”

Anything for a headline?

Aging Australian pop diva “Dannii Minogue was left desperately gasping for breath after being strangled by a python . . . in the video for her latest single [which she had] wanted to make her most sensual promo to date and thought that having a python wrapped seductively around her would send pulses racing. . . . [She described being unable to get the crew’s attention] ‘I started gesticulating wildly to the director to let him know I was in trouble, but he thought I was just moving around more passionately.’ Luckily, the unusual white python released his grip.” [*All Headline News* (West Palm Beach, Florida) June 26, 2006]

Not just urban legends

- A group of bandits in Calcutta have borrowed a method from banditos in southern Florida, they dangle a snake at their victim and demand cash. But perhaps smarter than the lads in Florida, first they ask for a few pennies as a protection subscription. As soon as the people get out their wallet or

purse, out comes the snake and the demand goes up to 100 rupees! To put it in perspective, that's about \$2.15 U.S. Even so, the police are alert and claim several such gangs are loose in the city. [*The Telegraph* (Calcutta, India) July 7, 2006]

- Ever hear “It’s hot enough to make a gator pant?” If so, it’s been proven, “gasping gator signals that it’s hot,” according to the Charleston, S.C., *Post and Courier*. A spokesman for the South Carolina Department of Natural Resources Alligator Project said, “Once their body temperature gets high, they’ll open their mouths like that and exhale the excess heat in their body,” and added “It’s very common, especially this time of year when water and air temperatures are real high.” [July 3, 2006]

Another snake tragedy

It’s only life on the food chain until snakes bite humans. *Agni Systems* published in Dhaka, Bangladesh reports that “a woman and her son were killed in snakebite at Kamaria village.” The woman was 40, her son was 17. Both died on their way to the hospital. It’s been a difficult week in the district; four people died and six were bitten but did not die. [July 4, 2006]

Zap—Newt-tralized!

Builders of cell phone towers beware! There is finally a species more powerful than you. It’s the great crested newt and developers of a 50-foot phone tower in England have run afoul of a population of the tiny amphibian. Strict conservation rules now kick into effect, more licenses and more fees for a tower they thought they had made in the shade. [*Horley Observer* (U.K.) June 7, 2006]

Concentration, concentration . . .

Researchers “at the Brazilian Federal University of São Carlos, in São Paulo state, showed that a protein found in the venom of the urutu, a Brazilian snake, can help heal and regenerate injured tissue, such as the damaged tissue found in heart attack victims.” At low concentration, the compound can help in the formation of new blood vessels, but higher doses reverse the effect—inhibiting new blood vessels. The former will be helpful for stroke, the latter for cancer research. This group is focusing on regeneration possibilities. [*People’s Daily* (Beijing, China) June 21, 2006; from Ms. G. E. Chow]

Polymerase fang reaction

Researchers are working on genetically engineering antivenin. “As reported in the latest issue of the prestigious medical journal, *PLoS Medicine*, researchers at the Liverpool School of Tropical Medicine have made an important breakthrough in using DNA sequencing rather than actual snake venom as the means to generate antivenin . . . [which] is conventionally manufactured by immunizing large animals with small quantities of venom and then extracting the antibodies produced in the blood. This new research has demonstrated however that it is possible to generate an antibody response by using synthetic DNA which closely resembles the most toxic and therefore the most important parts of actual venom.” They are working with carpet vipers first before extending the technique to other species. [*News Medical* (Australia) June 27, 2006]

Modern day Python and Pythia

Ghana Web reports an incredible story from their hinterlands. “A python revered as a god in the Sapeliga community near Bawku . . . swallowed a 55-year-old fetish priestess assigned to be its mouthpiece. While looking for the priestess who had been missing for three days, the inhabitants decided to slash the python into two, only to find her badly decomposed body. An assemblywoman, and a retired journalist of the Ghana News Agency . . . confirmed the incident and added that she had made several pleas to the community that it was dangerous to keep the python but they did not heed to her advice till this incident. The deceased has since been buried.” [(Accra) July 1, 2006]

What’s killing turtles?

DNA residues on the inside of empty turtle egg shells may help researchers figure out just what species of animals are eating diamondback terrapin eggs. Although according to the June 9, 2006, *Atlantic City Press* (New Jersey) the greatest killer of terrapins is automobiles. The article continued: “Last year, researchers installed a mile of silt fencing on Stone Harbor Boulevard in Middle Township to prevent turtles from crossing the road. The experiment worked . . . cutting down turtle road kills on that stretch from 41 in 2004 to six in 2005. Tweaking the experiment this year to include a more durable fence, researchers reported no fatalities. . . .” Elsewhere more than 400 turtles were squished by passing cars.

Toad Tales

- Male Wyoming toads, *Bufo baxteri*, were heard calling in the wild during a recent search. The species was found in the seventies, believed extinct in the 1980s, refound in 1987 at one location, taken into captive breeding, released by the thousands in the wild and hopefully saved for future generations. Hearing males call in the wild means some of the babies raised have matured, or else there are still native adult frogs that have never been in captivity. [*Rocky Mountain News* (Denver, Colorado) July 10, 2006]
- This year has been good for western toads, *Bufo boreas*, in northern Nevada. Two wet winters and a heavy July rain resulted in toads “everywhere.” One resident said, “There were hundreds of them hopping around in the grass. They were out in the street. My kids must have had 20 of them in each hand.” Just more proof that amphibians are explosive breeders; many years of few toads can be followed by a year of thousands. [*Associated Press*, July 26, 2006]

With thanks to everyone who contributed to this month’s column particularly those cited above and to all my super contributors: Wes von Papineau, Bill Burnett’s Aunt Peggy (via his mom, Hilda), Bill Burnett, Ms. G. E. Chow, Steve Christy, Marybeth Trilling, The New Zealand Herp Society, Ann Roberts, Alan Rigerman, Ken Mierzwa and maybe you, too. Send clippings to: Ellin Beltz, POB 1125, Ferndale, CA 95536; electronically to “ebeltz@ebeltz.net” please put the words “herp clipping” in the subject line.

The Tympanum

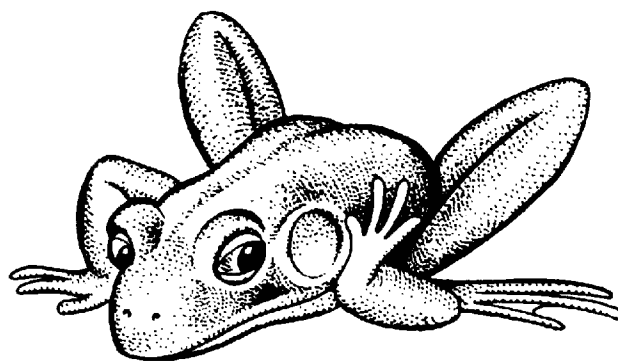
A Past CHS President writes from Florida . . .

One of the most memorable times I have had on the Chipola River, located in the panhandle of Florida, took place this past weekend, August 26-27, 2006. The Florida Turtle Conservation Trust (ftct.org) and Chipola College in Marianna, Florida, organized a clean-up of a spring-fed creek and adjacent river that is home to many interesting turtles.

To warm the local people to our effort, I gave a public presentation at the college on the natural history and conservation of map turtles with emphasis on the two Florida species, Barbour's map turtle (*Graptemys barbouri*) and the Escambia map turtle (*Graptemys ernsti*).

A group of 17 turtle enthusiasts from around the state had gathered in this small town to help clean up this popular, "recreationally challenged" stretch of the Chipola river system. We canoed and kayaked down the 4- to 5-mile stretch of creek and river collecting cans, bottles, bait containers and other garbage that had been discarded by inconsiderate tubers and canoeists. The problem on this section of the river was evident to all of those who participated. As we were picking up exorbitant numbers of disposable cans and bottles we noticed that numerous groups of tubers had floating coolers of beer that accompanied them on their trek down the river. We also noticed that most of the tubers were people under the age of 21. We witnessed nearly a hundred individuals throughout the day floating down the river with beer cans or bottles in their hands. Not only were they throwing cans/bottles and snacks back and forth from tube to tube, but the constant drifting into brush piles made it difficult for the turtles to bask in the sun. It has been suggested that a reduction in basking time of aquatic turtles, whether from lack of usable habitat or because of human disturbance, has a negative effect on metabolism. As a result of reduced basking time, the turtles could be more susceptible to sickness, shell problems, reduced egg production, etc.

We quickly realized that most of the empties from the floating coolers never reached the take-out point because they would be



solid evidence of underage drinking. Several law enforcement officers from the Florida Fish & Wildlife Conservation Commission (FFWCC) helped collect bags of garbage from our vessels. They told us that they are aware of the problem and they have been ticketing underage drinking and littering. The

city is working hard correct this problem and a new ordinance was passed stating that you cannot bring disposable food or drink items on the first 750 ft of the creek. This protected area is not very large, considering this popular run is approximately 4 miles long, but it is a start.

The day after the clean-up four of us went back down that stretch so we could snorkel for turtles and enjoy the drastic reduction in visible trash. All four of us will remember what happened that day forever. We had chased a bunch of Barbour's map turtles off their basking logs and were trying to find them in 8-12 feet of water. Tim Walsh (formerly of the Tennessee Aquarium and currently of the Chelonian Research Foundation) bolted to the surface and screamed "alligator snapper!" George Heinrich (past president of the Florida Turtle Conservation Trust) and Bill Love (a nature photographer, bluechameleon.org) frantically dove down trying to see it. Bill and George never did see the animal beneath the surface. The river by that time was very murky (silty).

When the snapper was spotted I was in the process of suiting up in my SCUBA equipment so I could get some underwater photographs and video of Barbour's map turtles. When Tim yelled about the turtle I put the rest of my gear on with lightning speed and swam out to the area where they were. It was about 20 feet from the shore. I immediately asked Tim where the turtle was. He pointed and I dove. I could not see anything because it was so silty from those three frantically trying to find it. I descended slowly, hoping not to land in its mouth. When I got about 10 feet down, I saw all the brush on the bottom. There were a lot more brush piles on the bottom of the river than the top. I was able to see a white head under some pretty dense brush. It was sitting on the bottom, but I



Chris Lechowicz holding a female Barbour's map turtle he snorkeled up from the Chipola River. Photograph by Bill Love.



Right to left: Bill Love, alligator snapping turtle, George Heinrich and Tim Walsh. Photograph by Chris Lechowicz.

could not see the shell, just the head. As I got closer, it backed up, turned around and made a run for the middle of the river. So, as it went into open water, I swam after it not having to worry about air. I was able to outswim the turtle and grab it on the river bottom. The others had no idea what was going on. I remembered the striking distance of these turtles as compared to common snappers and adjusted my catch accordingly. Alligator snapping turtles are much easier to grab because they don't do that "shoot-the-head-out-backwards" behavior that the common snappers do and you can grab them by the front of the shell (which I did not do until later). So, I turned the turtle around and attempted to swim back toward shore. This was not easy, as he was fighting and scratching me. I found it hard to surface because I could not inflate my vest with air. Both of my hands were trying to keep hold of the turtle. When I felt I had gone far enough towards shore, I started to swim upward, which was very hard while being countered by the turtle and not having enough air in my vest to keep us positively buoyant. My heavy weight belt and ~60-pound "friend" kept sinking me like a rock.

The others later told me that while they waited in anticipation of what was happening down below, they were caught by surprise by a "monster from the deep" that exploded to the surface. There was no sign of me because I was holding the turtle by the back of the shell. I did not know where the three of them were because I was still submerged while trying to hold the animal and myself near the surface. I assumed that someone would grab the turtle when I surfaced. I was wrong. Apparently, I was really close to Tim when I surfaced and the gaping mouth of this 60-lb turtle caused him to flee the spot in a big hurry. In reflection, I should of dropped my weight belt, but I did not have any hands available. After they realized I was struggling, which seemed like forever, they came over and grabbed the turtle. Then we spent the next half an hour taking pictures before we released the magnificent animal back into its domain.

**Chris Lechowicz, Technical Coordinator/Herpetologist,
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Mike Dloogatch is mad at me . . .

Oh, he'll probably deny it, but anyone who has to turn out our *Bulletin* month after month and maintain its very high quality while also dealing with volunteer amateurs like me must occasionally lose the battle of calm, cool, controlled editor and go berserk, even if it is in the privacy of his own home. I don't think he has any privacy at his office.

So he talks me into trying to write about the monthly meetings, or more specifically, the speakers at the monthly meetings, something that I've felt the lack of since Gary Kostka was unable to continue his excellent column. I know Gary Kostka; Gary Kostka is a friend of mine, and I'm no Gary Kostka. But Mike figured any port in a storm, and besides, he's used to cleaning up really bad writing. He says that he doesn't chase people with deadlines, but I know that he'd really like me to get the article out maybe the next month after the meeting. I would like that also, but sometimes it's not going to be possi-

ble. Last month it wasn't. So, since Mike is tolerant, and probably a little desperate, I am going to submit the articles for the July and August meeting together. I'll try to do better in the future.

My idea with these articles is to give our readers an idea of the quality of the speakers that we have at our monthly meetings. I can't reproduce the presentations verbatim, and a written account obviously lacks the outstanding visuals that usually accompany the talks, so at best I can convey the feel of the talks, maybe throw in some scientific stuff to educate you and me, and maybe even let you know what you're missing by not coming to the meetings. If there are errors, they are obviously my errors and not our speakers'. I won't be able to do this every month, because I can't attend every meeting, but I'll try to do as many as I can.

Here's what I need from you. I'm a hack, and I know I'm a hack, so all suggestions that you have will be at least considered before being discarded. If you want something else in the articles, let me know. Let me know when I mess up. I'm making this up as I go along, I'm trying to improve, and all that will be easier with some feedback. You can email me at j-archer@sbcglobal.net. Oh, and maybe you can suggest a better title than the ones Mike comes up with.

John Archer, 6N320 Circle Avenue, Medinah, IL 60157.



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Herpetology 2006

In this column the editorial staff presents short abstracts of herpetological articles we have found of interest. This is not an attempt to summarize all of the research papers being published; it is an attempt to increase the reader's awareness of what herpetologists have been doing and publishing. The editor assumes full responsibility for any errors or misleading statements.

A SNAKE THAT SPECIALIZES IN SPIDERS

O. A. V. Marques et al. [2006, The Herpetological Journal 16(1):37-45] report that the colubrid *Pseudablades agassizii* is a small philodryadine snake distributed in open areas in southeastern South America. The authors provide information on morphology, habitat use, diel activity, diet, feeding behavior, reproduction, and seasonal activity of this species, based on dissection of 146 specimens combined with field and captive observations. *Pseudablades agassizii* is smaller than any other species in the Philodryadini. Females attain larger body size than males. Sexual dimorphism was also recorded for stoutness and tail length, but not for head length. Apparently, *P. agassizii* forages during the day, mainly for resting spiders in subterranean and other daytime retreats. Lycosid and other araneomorph spiders were the staple food item, but mygalomorph spiders, scorpions, and orthopteran insects were also eaten. Large spiders were subdued by venom injection, whereas smaller ones were usually swallowed alive. Ingestion of lizards is infrequent and probably represents a vestigial trait. Absence of sexual dimorphism in relative head length may be related to ingestion of small prey. The reproductive cycle of females seems to be highly seasonal with vitellogenesis occurring from the onset to the middle of the rainy season, when females are more active. Recruitment of newborns takes place at the end of the rainy season. Males show increase in testes volume in the second half of the rainy season, and mating probably occurs at the end of rainy season, when adult males are more active. At least in southeastern Brazil, *P. agassizii* is a habitat specialist, sensitive to habitat alteration, and thus is an indicator species of environmental quality. Due to the rapid destruction of its main habitat, the Cerrado, the conservation status of this snake should be regarded as threatened.

A REVISION OF THE ANGLE HEAD LIZARDS

U. Manthey and W. Denzer [2006, Hamadryad 30(1&2):1-40] review the genus *Hypsilurus* on the basis of type specimens, additional museum material and earlier publications. Diagnostic features for each species are compiled and a key to the species is provided. Several species and subspecies are described as new: *Hypsilurus hikidanus* sp. n., *Hypsilurus magnus* sp. n., *Hypsilurus ornatus* sp. n., *Hypsilurus tenuicephalus* sp. n. and *Hypsilurus papuensis longicauda* ssp. n. *Hypsilurus longii* is removed from its synonymy with *H. godeffroyi*. *Hypsilurus modestus carinatus* becomes a junior synonym of *Hypsilurus modestus*. Species with common morphological characters are grouped and a possible subgeneric classification is suggested. The nomenclatural history of the genus is reviewed and *Hypsilurus* Peters, 1867 is proposed as nomen protectum, whereas the applicable name *Lophosaurus* Fitzinger, 1843 is considered a nomen oblitum. Distributional data of unambiguously identified material are given. A new lectotype is designated for *Hypsilurus godeffroyi*.

TOAD-HEADED PITVIPERS IN ECUADOR

D. F. Cisneros-Heredia et al. [2006, Herpetozoa 19(1/2):17-25] present information on the three species of *Bothrocophias* known to occur in Ecuador: *Bothrocophias campbelli*, *B. hyoprora* and *B. microphthalmus*, including geographical distribution, altitudinal range, provincial records, sympatric pitviper species, activity patterns, behavior, size, reproductive biology, diet and longevity. *Bothrocophias campbelli* inhabits the northern, central and southern regions of the Pacific slopes of the Andes in Ecuador between 800 and 2000 m; *Bothrocophias hyoprora* occurs in the northern and southern Amazonian lowlands and low eastern slopes of the Andes in Ecuador between 210 and 1500 m; *Bothrocophias microphthalmus* occurs in the southeastern slopes of the Andes in Ecuador between 600 and 2350 m. This paper reports the second known locality of *B. campbelli* in the province of Imbabura and the westernmost locality of *B. hyoprora* in the Nangaritza river valley. Sympatry between *B. hyoprora* and *B. microphthalmus* is confirmed at the Makuma area, province of Morona-Santiago, increasing the vertical distribution range of *B. microphthalmus* to at least 600 m. The white-bellied slender mouse opossum, *Marmosops noctivagus*, is reported for the first time as a prey of *B. microphthalmus*. New data are presented on reproductive biology, including litter and neonate sizes for *B. hyoprora* and *B. microphthalmus*. *Bothrocophias* pitvipers can produce up to 47 enlarged follicles and known litter sizes range from three to 36 young. Enlarged ovarian follicles have been reported in April for *B. campbelli*, juveniles in December for *B. microphthalmus* and from August to September for *B. hyoprora*. Relative clutch mass values in *Bothrocophias* ranged from 0.22 (in *B. microphthalmus*) to 0.30 (in *B. hyoprora*).

VIDEOTAPING TIMBER RATTLESNAKES

R. W. Clark [2006, Copeia 2006(2):181-187] notes that our ability to understand predator-prey systems is often limited by a lack of detailed information on fundamental aspects of organismal natural history. It is particularly difficult to gather quantitative data on the behavior of sit-and-wait predators, which are generally secretive and feed infrequently. This study used video surveillance equipment to record natural interactions between a predator, *Crotalus horridus*, and its prey. From observations of 17 individuals over two years, a total of 87 encounters with prey were recorded, with snakes successfully attacking 13% of prey items that came within striking distance. Snakes stayed at ambush sites for a mean of 17 hours and were estimated to feed between 12 and 15 times over the course of a season, consuming between 1250 and 1550 g of prey per snake, mostly woodland rodents (*Peromyscus*, *Microtus*, *Clethrionomys*, *Tamias* and *Sciurus*). These data represent some of the most detailed quantitative measures on snake foraging behavior and predator-prey interactions available and can be used to inform general ecological and behavioral models in similar systems.

In Memoriam: J. Alan Holman (1931–2006)

J. Alan Holman died suddenly of a heart attack on 12 August 2006 at his beloved fishing cabin at Fife Lake in northern Michigan, ending a remarkable and productive career in vertebrate paleontology and herpetology, and leaving family, friends, and colleagues with a profound sense of loss.



Al Holman was born in Indianapolis, Indiana, in 1931, and very early developed an intense interest in the natural world, and amphibians and reptiles in particular. He recalled as a child having a continuous and ever-changing menagerie of the local herpetofauna, and noted that the common species in the area then are now among the rarest, including Kirtland's Snake (*Clonophis kirtlandii*) and the Cricket Frog (*Acris crepitans*), the latter being once so abundant that he often collected the little frogs as food for his snakes. Years afterward Al often lamented the obvious drastic decline in "herp" species and numbers over his lifetime. "What bothers me most," he would say, "is not that the rarer, more specialized species have become endangered or even disappeared—it's that the formerly common "generalist" species have now become rare—even in places that still seem to have habitat!" Al tried to do something about this situation, but his greatest contributions to science came in studying long-extinct amphibians and reptiles.

Al attended Franklin College in Indiana, receiving his Bachelor of Science degree in 1953. After a stint in the Navy, working as a medical corpsman, he then went on to graduate studies at the University of Florida, Gainesville, earning his MS degree in Biology in 1957, and his PhD in Systematics and Ecology in 1961. Al's doctoral advisor was Dr. Pierce Brodkorb, so not surprisingly his PhD thesis focused on fossil birds ("The Osteology of Living and Fossil New World Quail"). Another of his mentors at UF was Dr. Archie Carr, the famous marine turtle expert, who presumably encouraged Al's special lifelong appreciation for all things chelonian.

Al began his teaching career at Samford University and then Illinois State University before coming to Michigan State University in 1967, where he had joint appointments in the Geology and Zoology Departments. He taught the undergraduate course in vertebrate paleontology, and later (after the retirement of friend and colleague Dr. Max Hensley) the herpetology course. He also became the first curator of vertebrate paleontology at the MSU Museum. During his career, and after retirement, he described 53 new species, 22 genera, and one family of vertebrate fossils.

Al Holman focused his research on Cenozoic and Quaternary paleoherpetology in North America and Europe, and was a leading authority on New World fossil snakes. His studies on disharmonious Pleistocene "herp" faunas lent support for the

Pleistocene Climatic Equability Hypothesis (in part, the idea that at times during the Pleistocene, winters were warmer and summers were milder in much of eastern and central North America than occurs today.) He also dabbled in "larger" animals at times, including devising a hypothesis that, post-glacially, mammoths and mastodons migrated to Michigan from other areas to partake of salt deposits in the central lower peninsula. Al enjoyed field work and for many years led expeditions of graduate students to many parts of the United States and Canada, and also worked with colleagues in the United Kingdom. Important fossil sites included sinkholes in Florida, sand pits in Kansas and Nebraska, peat bogs in Michigan, and interglacial beds in Norfolk, England.

Al's research produced more than 300 publications, most of which were scholarly papers, but also a number of semi-popular and popular articles, along with eleven books. His productivity certainly did not decline after "official" retirement in 1997. His most recent book is "Fossil Salamanders of North America" (2006); other titles include "Fossil Frogs and Toads of North America" (2003), "In Quest of Great Lakes Ice Age Vertebrates" (2001), and "Fossil Snakes of North America" (2000). His concern for the conservation of living amphibians and reptiles was reflected in the production of three popular educational field guides on Michigan herps, co-authored with this writer: "Michigan Snakes" (revised in 2006), "Michigan Turtles and Lizards" (1990, rev. 1997), and "Michigan Frogs, Toads, and Salamanders" (1992). In 2003 Al and his wife Margaret ("Peg") Holman (a respected archeologist who died in April 2006) co-authored a popular guide to Michigan's natural and human history—"The Michigan Roadside Naturalist."

Al was a member of the Chicago Herpetological Society and a fan of the *Bulletin*. And he was among the *Bulletin*'s most frequent contributors. From 1977 through 2006 he wrote or co-authored 22 articles, reviews and letters that appeared in these pages.

Al Holman was foremost a dedicated educator. He chaired the committees of 21 graduate students at the master's and doctorate levels, and served on many others. His students knew him to be a kind and patient advisor, but with high expectations for academic achievement and communications skills. His colleagues knew Al as a reliable friend and confidant, ever willing to offer useful advice or assist with an academic question. A humble and often shy man, but with a droll wit and an uplifting sense of humor, Al's jokes could lighten the mood or break the tension at the driest or most acrimonious of staff meetings.

There can be no regrets for Al Holman's lifetime of contributions to his academic profession, his dedication and love for his family, and the well-earned respect of his colleagues and students. But we lament the untimely loss, and greatly miss his counsel and friendship.

James H. Harding, Department of Zoology, Michigan State University, East Lansing MI 48824.

Unofficial Minutes of the CHS Board Meeting, August 18, 2006

Rich Crowley called the meeting to order at 7:45 P.M. Board members Zorina Banas, Deb Krohn, Cindy Rampacek and Mike Scott were absent.

Officers' Reports

Recording Secretary: Linda Malawy stepped in and read the minutes of the July 14 meeting. Minor corrections were noted. Linda also read the minutes from May 19, 2006, as they had not been read in June. Both sets of minutes were accepted.

Treasurer: Andy Malawy distributed the July financial report and reviewed the income and expenses.

Membership Secretary: Mike Dloogatch stepped in, stating that 559 *Bulletins* were sent out in both July and August. He noted the discrepancy from the membership count for July and suggested that the number should be based on how many *Bulletins* we send out. Jason Hood suggested checking whether perhaps some members are not receiving *Bulletins*.

Vice-president: Linda Malawy gave an overview of the next few meeting programs. September will be Dan Pearson. October will be Marty Crump. November will be taken up with elections. December will be our first ever "Herp Holiday Party" with food and drinks (everyone bringing something along) and members will be encouraged to bring pictures instead of live animals. Linda reminded everyone that the September board meeting will be at the private residence of Deb Krohn.

Publications Secretary: Eric Williams believes the website has become an antique and should be more dynamic and interactive, including a possible peer-edited internet forum. Jason Hood suggested a good book-review section that would include many of the reviews published in the *Bulletin*. Eric received permission and strong support in asking our webmaster to update the website and put up a forum. Since the next board meeting will be at a residence with a computer, the board will hopefully be able to approve the updates then.

Sergeant-at-arms: Betsy Davis reported attendance at the last general meeting was 53.

Committee Reports

Shows: Jenny Vollman (via phone) told us about Friday, September 22, from 10 to 2 with Project Exploration (insurance is an issue). For August 27, 12-5, Itasca's Springbrook Nature Center would like some CHS presence. Also, we need to begin thinking about next year's Family Pet Show. Mike Dloogatch said that our display at Lt. Governor Quinn's pavilion at the State Fair was good but not too busy. The next Peggy Notebaert shows are Sept. 2-3 and Oct. 7-8.

Nominating Committee: So far Mike Dloogatch, Jenny Vollman, Kira Geselowitz and Jason Hood have been appointed.

New Business

Rich reported that the CHS received an invitation to be affiliated with the International Commission on Zoological Nomenclature (ICZN). Mike Dloogatch was strongly in favor, as were the other attendees at the meeting. Rich signed the affiliation form.

Roundtable

Mike's been receiving positive feedback on the "Death from Snakebite . . ." supplement.

Mike mentioned that he's very pleased with the August *Bulletin*, and especially recommended that everyone read the article "What, If Anything, Is a Reptile?"

Linda brought up the topic of a Summer '06 CHS trip. Eric suggested a group trip to Rob Carmichaels's nature center. Jason Hood volunteered to ask Rob about it and see if we could come up with a date if Rob was agreeable.

Rich suggested a herping scavenger hunt over the course of a few months, stressing the importance of locality, etc. It could even have prizes.

The meeting was adjourned at 9:37 P.M.

Respectfully submitted by Kira Geselowitz for the Recording Secretary

Advertisements

For sale: rats and mice — pinkies, fuzzies and adults. Quantity discounts. Please send a SASE for pricelist or call Bill Brant, *THE GOURMET RODENT*, 6115 SW 137th Avenue, Archer FL 32618, (352) 495-9024, E-mail: GrmtRodent@aol.com.

For sale: from **The Mouse Factory**, producing superior quality, frozen feeder mice and rats. We feed our colony a nutritionally balanced diet of rodent chow, formulated especially for us, and four types of natural whole grains and seeds. Mice starting from: pinks, \$.17 each; fuzzies, \$.24 each; hoppers, \$.30 each; weanling, \$.42; adult, \$.48. Rats: starting with pinks at \$.45 each, to XL at \$1.80 each. Discount prices available. We accept Visa, MC, Discover or money orders. PO Box 85, Alpine TX 79831. Call **toll-free** at (800) 720-0076 or visit our website: < <http://www.themousefactory.com>> .

For sale: **high quality frozen feeders**. Over a decade of production and supply. Seven sizes of mice available: small newborn pinks up to jumbo adults. Prices start at \$25 per 100. Feeders are separate in the resealable bag, not frozen together. Low shipping rates. Free price list. Kelly Haller, 4236 SE 25th Street, Topeka KS 66605, (913) 234-3358 evenings and weekends.

For sale: herp books. *Australian Lizards* by Robert Bustard, 1970, 162 pp., 80 photos in color and b&w, natural history info on Australia's 5 lizard families, contains observations from Bustard's studies of lizards in the Pilliga Scrub, bookplate of former owner, hardbound, \$55; *Australia's North, A Natural History of Australia*, vol. 3, by Stanley and Kay Breeden, 1975, 208 pp., an outstanding account of the ecology of primarily the Top End (i.e., Kakadu), includes many reptiles, excellent color and b&w photos (some full page), DJ, hardbound, \$35; *Australia's Tropical Rainforests World Heritage* magazine, 2005-6, 16 10"×16" pp., color photos, main article on mountains of the Wet Tropics, 2 pp. article on snakes featuring the amethystine python, color photo of amethystine on cover, sent folded in half, \$4; *Boy's Book of Snakes* by Percy Morris, 1965 (first edition, first printing), 185 pp., many b&w photos, a few ink marks at bottom of introductory pages, hardbound, \$20; *The Snakes of Arizona* by Jack Fowlie, 1965, 164 pp., signed by author, hardbound, \$55. All books in excellent condition except as noted. Postage and handling \$2.50 for orders under \$25, free for orders of \$25 or more. William R. Turner, 7395 S Downing Circle W, Littleton, CO 80122, (303) 795-5128, e-mail: toursbyturner@aol.com.

For sale: Captive bred normal, tiger ,and super tiger reticulated pythons. Normals \$80, tigers \$150, super tigers \$250. All hatched in April of this year. All hatchlings are eating thawed rats. Prices do not include shipping and are shipped Delta Dash unless other arrangements are made. Please contact Jim Gaspar, (219) 696-1432 or email: gaspar5@comcast.net

Herp tours: Adventure trips to **Madagascar!** Journey somewhere truly unique to seek and photograph nature on the world's least-studied mini-continent. For maximum herp fun and discovery, join Bill Love as we go where few people will ever venture in their lives. Let his experience assure a comfortable tour finding the most colorful and bizarre species on the planet! Get all the details at Blue Chameleon Ventures' comprehensive new website: < <http://www.bluechameleon.org>> , E-mail: bill@bluechameleon.org, or call (239) 728-2390.

Herp tours: The beautiful Amazon! Costa Rica from Atlantic to Pacific! Esquinas Rainforest Lodge, the Osa Peninsula, Santa Rosa National Park, and a host of other great places to find herps and relax. Remember, you get what you pay for, so go with the best! GreenTracks, Inc. offers the finest from wildlife tours to adventure travel, led by internationally acclaimed herpers and naturalists. Visit our website < <http://www.greentracks.com>> or call (800) 892-1035, e-mail: info@greentracks.com

Virtual Museum of Natural History at www.curator.org: Free quality information on animals — emphasis on herps — plus expedition reports, book reviews and links to solid information. Always open, always free.

Wanted: I'm looking for my soulmate. I want to settle down to a family before it is too late. But I have this problem. . . . When we get into hobbies and interests: old popular records, jazz and show tunes, and antique electronics are fine, but when I mention turtles, "What, are you crazy?" So maybe this is a better place to look. Please don't try to separate me from my turtles — at least not most of them. If interested, please drop a line to Ellis Jones, 1000 Dell, Northbrook IL 60062, telling a bit about yourself and giving a phone number.

Line ads in this publication are run free for CHS members — \$2 per line for nonmembers. Any ad may be refused at the discretion of the Editor. Submit ads to: Michael Dloogatch, 6048 N. Lawndale Avenue, Chicago IL 60659, (773) 588-0728 evening telephone, (312) 782-2868 fax, E-mail: MADadder0@aol.com

UPCOMING MEETINGS

The next meeting of the Chicago Herpetological Society will be held at 7:30 P.M., Wednesday, September 27, at the Peggy Notebaert Nature Museum, Cannon Drive and Fullerton Parkway, in Chicago. **Dan Pearson**, of Gainesville, Florida, will speak on “Keeping and Breeding the Malagasy Spider and Flat-tailed Tortoises, *Pyxis arachnoides* and *P. planicauda*.” These species are listed as Vulnerable and Endangered, respectively, on the IUCN Red Data List. Both species were exported from Madagascar in large numbers during 2000 and 2001.

At the October 25 meeting **Marty Crump**, adjunct professor of biology at Northern Arizona University will talk about “Amazing Frogs: Appearance, Behavior and Lifestyle.”

The regular monthly meetings of the Chicago Herpetological Society take place at Chicago's newest museum — the **Peggy Notebaert Nature Museum**. This beautiful new building is at Fullerton Parkway and Cannon Drive, directly across Fullerton from the Lincoln Park Zoo. Meetings are held the last Wednesday of each month, from 7:30 P.M. through 9:30 P.M. Parking is free on Cannon Drive. A plethora of CTA buses stop nearby.

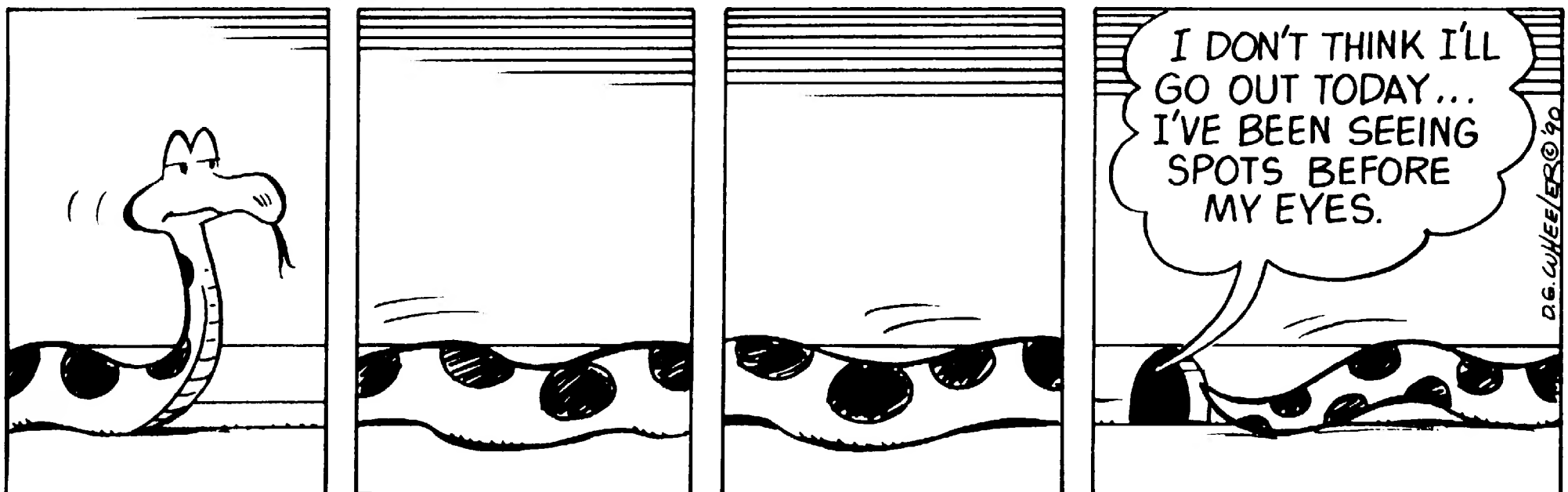
Board of Directors Meeting

Are you interested in how the decisions are made that determine how the Chicago Herpetological Society runs? And would you like to have input into those decisions? If so, mark your calendar for the October 13 board meeting, to be held at the North Park Village Administration Building, 5801 North Pulaski Road, Chicago. To get there take the Edens Expressway, I-94, and exit at Peterson eastbound. Go a mile east to Pulaski, turn right and go south to the first traffic light. Turn left at the light into the North Park Village complex. At the entrance is a stop sign and a guardhouse. When you come to a second stop sign, the administration building is the large building ahead and to your left. There is a free parking lot to the left and behind the building.

The Chicago Turtle Club

The monthly meetings of the Chicago Turtle Club are informal; questions, children and animals are welcome. Meetings normally take place at the North Park Village Nature Center, 5801 N. Pulaski, in Chicago. Parking is free. For more info call Lisa Koester, (773) 508-0034, or visit the CTC website: <http://www.geocities.com/~chicagoturtle>.

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